

Claims

1. A liquid-fuel feed fuel cell, having at least one of a unit cell and a cell stack having a plurality of unit cells stacked, the unit cell and each of the unit cells comprising: an anode and a cathode opposed with each other; a proton conductive polymer electrolyte interposed between the anode and the cathode; and structures of supplying a liquid-fuel to the anode and supplying an oxidant gas to the cathode, the liquid-fuel feed fuel cell comprising a potential monitor monitoring a potential between the anode and the cathode of at least one of said unit cell and at least one of said unit cells in said cell stack, the potential monitor having at least one of functions of increasing a supply of at least one of the liquid-fuel and the oxidant gas, raising an alarm, decreasing an output current of said fuel cell, and stopping an operation of said fuel cell, upon detecting said potential below a predetermined negative potential.
2. A liquid-fuel feed fuel cell system comprising at least two cell stacks having a plurality of unit cells connected in series, each of the unit cells comprising: an anode and a cathode opposed with each other; a proton conductive polymer electrolyte interposed between the anode and the cathode; and structures of supplying a liquid-fuel to the anode and supplying an oxidant gas to the cathode, each of said cell stacks having a plurality of cell groups comprising at least one of said unit cells, a cell group of said cell groups, in one of said cell stacks, connected in parallel to a corresponding cell group of said cell groups in the other of said cell stacks.
3. A liquid-fuel feed fuel cell system according to claim 2, comprising a potential monitor monitoring a potential between the anode and the cathode of at least one of said cell groups and at least one of said unit cells constituting said cell group, the potential monitor having at least one of functions of increasing a supply of at least one of the liquid-fuel and the oxidant gas, raising an alarm, decreasing an output current of said fuel cell, and stopping an operation of said fuel cell, upon detecting said potential below a predetermined negative potential.

4. An operation monitoring method of a liquid-fuel feed fuel cell having at least one of a unit cell and a cell stack having a plurality of unit cells stacked, the unit cell and each of the unit cells comprising: an anode and a cathode opposed with each other; a proton conductive polymer electrolyte interposed between the anode and the cathode; and structures of supplying a liquid-fuel to the anode and supplying an oxidant gas to the cathode, characterized by monitoring a potential between the anode and the cathode of at least one of said unit cell and at least one of said unit cells in said cell stack to perform at least one of functions of increasing a supply of at least one of the liquid-fuel and the oxidant gas, raising an alarm, decreasing an output current of said fuel cell, and stopping an operation of said fuel cell, upon detecting said potential below a predetermined negative potential.

5. An operation monitoring method of a liquid-fuel feed fuel cell according to claim 4, the liquid-fuel feed fuel cell comprising at least two-said cell stack having a plurality of cell groups comprising at least one of said unit cells, a cell group of said cell groups in one of at least two-said cell stack connected in parallel to a corresponding cell group of said cell groups in the other of at least two-said cell stack.

6. An operation monitoring device of a liquid-fuel feed fuel cell having at least one of a unit cell and a cell stack having a plurality of unit cells stacked, the unit cell and each of the unit cells comprising: an anode and a cathode opposed with each other; a proton conductive polymer electrolyte interposed between the anode and the cathode; and structures of supplying a liquid-fuel to the anode and supplying an oxidant gas to the cathode, comprising: a potential monitor monitoring a potential between the anode and the cathode of at least one of said unit cell and at least one of said unit cells in said cell stack; and a controller performing at least one of functions of increasing a supply of at least one of the liquid-fuel and the oxidant gas, raising an alarm, decreasing an output current of said fuel cell, and stopping an operation of said fuel cell, upon detecting said potential below a predetermined negative potential.

7. An operation monitoring device of a liquid-fuel feed fuel cell according to claim 6, comprising at least two-said cell stack having a plurality of cell groups comprising at least one of said unit cells, a cell group of said cell groups in one of at least two-said cell stack connected in parallel to a corresponding cell group of said cell groups in the other of at least two-said cell stack.